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ABSTRACT

A description of the degree program, Master of Science in Information Science (Documentation), given by the School of Library Service, UCLA is reported. The program is designed to provide students with both a common core of technical knowledge and directions for specialized, individual research work. The major emphasis is on information system design, however, and support for students specializing in medical library information systems has been provided by the National Library of Medicine. Details are presented of the program organization and structure, administrative organization and requirements for admission. The status of past graduates and present enrollees, as well as future plans, are summarized. (Other reports in the series are ED 039 911, 041 484, and LI 004 205.) (Author)

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EDUCATION OF MEDICAL LIBRARY SYSTEMS ANALYSTS

R. M. Hayes

Number 1 of a Series of Reports on

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(Documentation)

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Institute of Library Research
University of California
Los Angeles, California

TABLE OF CONTENTS

ABSTRACT. i

I. INTRODUCTION. 1

--Background. 1

--Program Purpose and Objectives. 2

--Emphasis. 3

II. PROGRAM ORGANIZATION AND STRUCTURE. 4

--Course Requirements and Recommended Sequence. 4

--Thesis Requirements and Advisory Committee. 6

III. ADMINISTRATIVE ORGANIZATION 8

--Departmental Faculty. 8

--Other Departments and Programs. 8

--Relation to Computing Facility and Library. 9

IV. MSIS STUDENTS 10

--Qualifications and Criteria of Selection. 10

--Recruitment 11

--Enrolees and Graduates. 11

V. PLANS 12

--Evaluation Plan and Procedures. 12

--Teaching Tools. 12

VI. REFERENCES. 14

ABSTRACT

This report is a description of the degree program, Master of Science in Information Science (Documentation), given by the School of Library Service, UCLA. The program is designed to provide students with both a common core of technical knowledge and directions for specialized, individual research work. The major emphasis of the program is on "information system design", however, and support for students specializing in medical library information systems has been provided by the National Library of Medicine. Details are presented of the program organization and structure, administrative organization, and requirements for admission. The status of past graduates and present enrollees, as well as future plans, are summarized.

I. INTRODUCTION

This report is a description of the educational program for students earning the degree "Master of Science in Information Science (Documentation)" given by the School of Library Service of the University of California at Los Angeles.

BACKGROUND

As the complexity of our society has increased, the need for informed decisions has correspondingly increased. The result has been an ever greater demand for information services adequate to the decision-making process. During the same period, we have witnessed the development of mechanical tools which can be used to aid the processes of obtaining, analyzing, storing, and retrieving the ever greater volumes of information. The confluence of these two developments--the growing needs for information with the increasing capability for handling it--has led to the implementation of a variety of information systems, both manual and mechanized. In technical fields, these have been called "information centers;" in social and political fields, "data banks;" in business, "management information systems;" in the military, "command and control systems." To date, these have all been in large part experimental, since there are still many unresolved problems in their design, in their operation, in their integration with the decision processes they serve, in the balance between their cost and their value. However, it is clear that these problems will be solved and that more and more information systems, of all kinds, will be established on an operational basis.

There is great need for personnel educated for solution of information handling problems and able to do basic research in what is, almost universally, called "information science," as the formalization of the processes for handling information, particularly in the context of modern library techniques and information retrieval.

In recognition of the need for persons trained at the graduate level in these new developments, in the fall of 1965 the UCLA School of Library Service instituted a graduate program in the information sciences, with emphasis on specialized subject areas.

PROGRAM PURPOSE AND OBJECTIVES

The information science curriculum is designed to provide the student with the intellectual orientation and technical tools necessary for successful professional work and research in this field. It does so by three stages:

1. Providing a common core of technical knowledge, integrated by a framework of the total field,
2. Providing directions of specialization within the field, and
3. Bringing the student to the point of successful, independent research work.

Because of the nature of information science, the student must understand the problems in utilization of recorded information, the problems in operation of information systems, and the problems in their technical implementation. Therefore the common core of technical knowledge must give the student the tools for developing his understanding in these aspects. The direction for his specialization will normally be in one or another of these three aspects--the information specialist being concerned with utilization, the manager of an information system being concerned with

operational techniques, and the system designer being concerned with technical problems in implementation. Independent research will normally be into problems in the relationships among these aspects of information handling.

EMPHASIS

Within this general framework, particular emphasis has been placed on specialization in "information system design", and support for the training of students in that specialty to work on medical library information systems has been provided by the National Library of Medicine. The demand for such personnel arises out of the growing needs for information in the medical sciences, the development of new tools for assisting literature reference work that has led to the implementation of MEDLARS, the resulting plans for a national medical information network including regional medical libraries and MEDLARS centers, and the need for continued study of medical information problems.

II. PROGRAM ORGANIZATION AND STRUCTURE

COURSE REQUIREMENTS AND RECOMMENDED SEQUENCE

The MSIS degree program comprises an integrated course of study in the theoretical and practical foundations of information handling. The program is an inter-disciplinary one with emphasis upon research and general principles in information science. Within this general scope, there are four areas of course work: (1) system design and integration, (2) organization of information records, (3) management of information activities, and (4) use of equipment.

Each student is required to complete his background in a common core of knowledge in each area so as to be able to understand how all the parts fit together. Specifically, the student must complete at least three quarter courses in each of the four areas. The following chart is the form used to advise students of recommended courses.

Such a program, with the thesis requirement, requires one and one-half to two years of work.

Because of the interdisciplinary nature of information problems, the course work of the curriculum is drawn from a number of departments and schools. Specifically: (1) The core courses of the information science curriculum (Library Science 240, Information System Analysis and Design; and Library Science 249, Seminar in Information Science), those which integrate the diverse tools into a single focus, have been placed in the

SCHEDULED COURSES

In general, "Recommended" Courses (or their "Alternates") should be regarded as "Required", unless there are specific interests on the part of the student which would be better served otherwise. For example, whenever possible the student should substitute a more advanced course (for which he is qualified) for a "Recommended" Course.

AREA	DESCRIPTION	RECOMMENDED COURSES	ALTERNATE COURSES	SPECIALTY COURSES
I.	Must be taken in 3rd Qtr. This is the integrating course	LS240		BA203ABC, 210ABC, 240ABC, 241AB, 245, 247AB Engin 222BC, 270ABCD, 277AB Math 202AB, 206, 276ABC
	Statistics	BA115A	BA115; Econ 140; Math 152AB Psych 141, 142, PH 160ABCD Soc 110AB	
	Operations Research & Techniques Mathematical Modelling	BA140	Econ 146, 147; Engin 179AB Math 144, Ling 180	
II.	Cataloging and Classification	LS211	LS210, 410, 411	LS412, 415, 431, 215, 261 Soc 200ABC, 216, 227 Subject Specialty Courses
	Compre. Bibliography	LS421	LS402, 420, 422, 429, 430	
	Specialized Bibliography	LS221	LS222, 223, 224	
III.	Managerial Accounting	BA403	BA122	BA224, 190AB, 250AB, 290, 291
	Type of Library	LS461	LS470, 471	
	Management of Libraries	LS450		
IV.	Computer Programming	BA113A	BA113B, Engin 125L, Math 141ABC	Math 220ABC, 222AB BA214ABC, 218ABCD Engin 225LM, 220A Phil 127AB
	Applications of Computer	LS241	LS243; LS440, Ling 240, Engin 225L, Engin 125AB, 120A, 127B	
	Applications of Computer	LS242	" " "	
S.	Must be taken in 4th Qtr. This course is a seminar in which the student develops & presents his thesis proposal.	LS249		
	Must be taken in 5th Qtr.	LS596		
	Must be taken in 6th Qtr. This course covers independent study to write the thesis.	LS598		
	Three Specialty Courses or alternates in one of the Areas I, II, III, IV.	Specialty	I, II, III, IV	
		Specialty	"	
		Specialty	"	

School of Library Service because librarianship is the profession most completely concerned with the handling of information as such; in this sense, information science is viewed as a part of the theoretical foundations of librarianship.

(2) Courses providing the students with knowledge of the technical tools of system design--statistics, operations research, optimization techniques, etc.--are taken in the Mathematics Department, Engineering, or Business Administration. The specialized course in this area offered by the School of Library Service--Methods of Information System Analysis and Design (LS 240)--is required of all students in the program.

(3) Courses providing the students with knowledge of the technical tools of information service--bibliography, cataloging and classification, reference, etc.--are taken in the School of Library Service.

(4) Courses providing the students with knowledge of the tools of management are taken in the School of Business Administration (managerial accounting, for example) and in the School of Library Service (Library Administration and the Management of special types of libraries).

(5) Finally, courses providing the students with knowledge of the computer are taken in a number of schools and departments, including the Schools of Business Administration, Engineering, and Public Health and the Departments of Linguistics and Mathematics. Four specialized courses in this area are offered by the School of Library Service--Data Base Systems, Information Retrieval Systems, Management Information Systems, and Library Data Processing--and the student is required to take at least one of those.

Normally, the student is expected to spend his first year (three academic quarters) in course work covering all four areas, the integrating course--Methods of Information System Analysis and Design--being taken in the third quarter. The second year is then spent in developing and writing the thesis, with course work chosen to support the thesis topic.

THESIS REQUIREMENTS AND ADVISORY COMMITTEE

The thesis occupies a central role in the MSIS degree program. It provides the means for the students to develop and explore a research problem in the design of modern information systems. It also provides an instructive experience in preparing a proposal for a definite project, scheduling the work which needs to be done, and carrying out the work itself. As a result the student is better able to evaluate his own capacity and that of others to execute projects.

To provide a formal basis for development of his thesis proposal, the student is required to take a course in research methodology--a Seminar in Information Science (LS 249)--taken in the fourth quarter. The course is organized to provide a forum for each student participating to present a problem area in information science (presumably one arising out of the discussions in the prior course on Methods of Information System Analysis and Design). The student is expected to present the problem area to the class, to develop an annotated bibliography of prior work in it, to define a specific issue within the problem area which will be the topic of his thesis, to propose an approach to resolution of the issue, and to schedule his work over the succeeding two quarters (or longer time as required) for completion of his thesis.

This thesis proposal becomes the basis of the student's subsequent work. An advisory "Thesis Committee" is established, consisting of two members of the faculty of the School of Library Service (one of them the student's thesis advisor) and one from another department with specific interest in the area of the thesis. The Committee reviews the thesis proposal, makes recommendations concerning related studies, the validity of the proposed approach, and the conduct of the study itself. The Committee also conducts the final examination and approves the thesis.

III. ADMINISTRATIVE ORGANIZATION

DEPARTMENTAL FACULTY

The staff involved in the MSIS program indlude:

(1) Those directly responsible for the MSIS program itself: Professor R. M. Hayes and Professor H. Borko.

(2) Other members of the faculty of the School of Library Service, including visiting faculty specifically concerned with courses in the MSIS program.

(3) Faculty of other schools and departments teaching courses required of MSIS students and serving as members of MSIS Thesis Committees.

(4) Staff of the Institute of Library Research, who are helping develop the teaching tools for the MSIS curriculum and assisting in some of the course work.

OTHER DEPARTMENTS AND PROGRAMS

The MSIS curriculum bears a close relation to cognate courses and programs elsewhere in the university. In presentation of the MSIS curriculum, those courses in other schools and departments which MSIS students take were listed. On the other hand, courses in the School of Library Service are also taken by students in other degree programs.

Of equal importance is the relationship of the MSIS program to the MLS and related work. The School of Library Service has initiated a set of Post-MLS specializations, one of which is in "Library Systems Analysis".

Normally, students with an MLS are encouraged to work for a Post-MLS specialization rather than an MSIS, since this choice would allow them to focus their attention on the courses in other schools and departments needed to add technical expertise to their knowledge of libraries.

RELATION TO COMPUTING FACILITY AND LIBRARY

Since the relationship between the computer and the library is at present the primary focus of the MSIS program, there are important roles for each to play in it.

First, a computer based laboratory for education in information science and system design is being developed by the Institute of Library Research. It will include programs for data base management, for library clerical processing, and for man-computer dialogue. The hardware involved includes a large-scale computer (the Campus Computer Network's IBM 360/75), associated direct access memories (disc and data-cells), display consoles (IBM 2260's), and plans for a small-scale computer (an IBM 360/20) connected to the CCN. Students in the program as well as from other schools and departments are involved in the development of this laboratory as well as in its use as part of their own education.

Second, the library serves as the primary experimental vehicle for studies of operations, costs, users, and additions to service. Library staff have cooperated with students as well as with the Institute of Library Research in these studies.

IV. MSIS STUDENTS

QUALIFICATIONS AND CRITERIA OF SELECTION

To be considered, the applicant must meet all qualifications for admission to the Master of Science in Information Science (Documentation) program of the Graduate School of Library Service, and must be admitted unconditionally by the Graduate Division. Specifically, the applicant must have completed an undergraduate major or higher degree in one of the fields offered as majors in the departments of the UCLA College of Letters and Science. The applicant must have completed the equivalent of at least two quarters of calculus. The applicant must have a grade point average of 3.0 (i.e., "B") or higher and have made a satisfactory score on the Aptitude Test of the Graduate Record Examination. Highest earned degree must have been conferred within ten years prior to date of application.

Selections for NLM Stipends are made by a committee of the faculty of the Graduate School of Library Service. Successful applicants will probably have Grade Point Averages of 3.5 or higher, since the GPA is the primary competitive criterion. In calculating GPA, upper division and graduate work only are considered and, when there has been extensive graduate work, it is given more weight. However, no other preference is given to applicants who have done post graduate work.

The Graduate Record Examination scores for verbal and quantitative aptitude must each be at least 500 and the total must be at least 1200. Beyond that, the GRE is a secondary criterion when needed for selection among applicants with approximately the same GPA.

The National Library of Medicine has placed no specific requirement for background nor has it required a commitment on the part of the student to work in the medical information field. However, there is a moral obligation for the student seriously to consider such work. The relevancy of past experience, statements of interest in applying for admission, and letters of reference will therefore also be considered in making awards.

Normal starting date is the Fall Quarter of each year. The degree program itself requires a minimum of six quarters in residence and normally the student is expected to complete his work by the end of the Spring Quarter two years later. Awards are made for one year periods, but those made for the first year are normally renewable for the second year provided the student maintains an acceptable level of performance.

RECRUITMENT

Brochures have been distributed through universities throughout the country. Samples follow.

ENROLLEES AND GRADUATES

The following chart lists data about past and present students in the program.

THE UCLA SCHOOL OF LIBRARY SERVICE

ANNOUNCES

1968-69

Student Stipends Sponsored by The National Library of Medicine

To be awarded to several candidates for the degree

Master of Science in Information Science

(Documentation)

Basic Stipends of $2,500

Additional allowances for tuition & fees, support of dependents, and travel.

For details on qualification for award, application procedure, criteria of selection, etc., write to:

GRADUATE SCHOOL OF LIBRARY SERVICE
UNIVERSITY OF CALIFORNIA
LOS ANGELES, CALIFORNIA. 90024

SUMMARY DATA ON STUDENTS

NAME	SEX	BIRTH DATE	BACKGROUND	START DATE	EXPECTED FINISH	THESIS TOPIC
BEDOIAN Carol D.	F	1935	B.A. Anthropology	1967	1969	
CABANISS Margaret	F	1944	B.S. Mathematics	1967	1968	Using the Computer for Text Collation: Problems, Studies, and a Method for Solution
DE BOER Aeint H.	M	1942	B.A. Mathematics	1967	1969	
EATON Clyde B. Jr.	M	1924	M.S. Mathematics M.L.S. Library Science	1966	1968	Cost Analysis of Library Service to On-Campus and Off-Campus Clients of a University Research Library
KINACH Eleanor	F	1933	Ph.D. Physical Chemistry	1965	1966	Information Centers and Mechanized Services for Chemistry
LANE Nancy D.	F	1946	B.A. Mathematics	1966	1968	Using the Computer for Scheduling of Distribution of Audio-Visual Material
PAULSON Rita C.	F	1926	Ph.D. Bacteriology	1967		
PEARSON Karl M. Jr.	M	1933	B.A. English (Lit.)	1966		Providing for Machine Readable Statistical Data Sets in University Research Libraries
PROFANT Lawrence	M	1941	B.A. English	1967	1969	
WINIK Ruth B.	F	1924	M.L.S. Library Science B.A. Liberal Arts (English)	1965		

V. PLANS

EVALUATION PLAN AND PROCEDURES

There are as yet too few graduates to provide any basis for evaluation of this program. However, within this coming year between five and ten students will have graduated and become employed. Therefore, within two years a questionnaire will be developed and sent to these graduates and their employers. Its purpose will be to determine the following:

(1) Where are graduates working? (I.e., what kinds of organizations and where geographically)

(2) What are they doing? (I.e., administratively, where are they placed, what functions are they carrying out, and what responsibilities do they have)

(3) How well did their MSIS work prepare them? (I.e., was their technical training adequate and did it provide them with the personal discipline necessary for their assigned responsibilities)

(4) What is the need for personnel with this training?

TEACHING TOOLS

A data processing laboratory is being developed with programs and data bases appropriate to the educational requirements in information systems analysis. This will include representative examples of both

clerical routines and information processing programs, as well as a variety of representative machine readable files. Plans are to continue this development.

Several texts are being developed around the needs in teaching information systems design. Plans are to complete the writing of them and have them published.

VI. REFERENCES

Hayes, R. M.: "Education for Information Systems Analysis", in International Conference on Education for Scientific Information Work, The Hague, Federation Internationale de Documentation (FID), September 1967, pp. 105-114.

Hayes, R. M.: "The New Master of Science Degree in Information Science (Documentation) to be Given by the School of Library Service, UCLA", in Education for Information Science, MacMillan, 1965, pp. 61-66.